

QUESTION

Find the general solution of the differential equation $\frac{dx}{dt} = \frac{x^3}{t^2}$.

ANSWER

$$\frac{dx}{dt} = \frac{x^3}{t^2}, \text{ therefore } \int x^{-3} dx = \int t^{-2} dt$$
$$\frac{x^{-2}}{-2} = \frac{t^{-1}}{-1} + c, \text{ therefore } -\frac{1}{2x^2} = -\frac{1}{t} + c$$